

**R e m a r k s**

**Petition to Extend Time**

A petition to extend time for response accompanies this paper. The petition requests that the Commissioner extend time for response for one (1) month from July 8, 2005 to August 8, 2005.

**Drawing**

In Paragraph 1 of the Office action, the Examiner objected to Applicants' informal drawing because various sheets "do not conform to the margin requirements set forth by the draftsman." Accordingly, a formal drawing (5 sheets) accompany this response. The formal drawing is to be substituted for the informal drawing, which accompanied the filing of the present application.

**Amendments to the Claims**

Claims 1-13 remain in the application for reconsideration, including original claims 1-7 and 9-12, which have been allowed; claim 8, which has been objected to; and claim 13, which has been rejected.

Only claim 8 has been amended to comply with the informality correctly pointed out by the Examiner. In particular, claim 8 has been amended to indicate that the aperture in the spatial filter transmits characteristic x-rays; it does not block Bremsstrahlung photons.

No new matter has been added by this amendment. This function of the filter and its aperture is clearly described in, for example, the section of the specification entitled "The Filter 16" beginning at page 4, line 30.

**Claim Rejection – 35 USC 102**

Claim 13 has been rejected under 35 USC 102(b) as being anticipated by G. Gutman, US Patent Application Publication No. 2002/0003856 A1 (hereinafter **Gutman**). The Examiner states her position as follows:

Regarding claim 13, Figure 1 of Gutman teaches a micro-miniature x-ray apparatus for steering focused x-rays in a selected direction, said apparatus comprising: a radiation source (41, 42, 44) for generating both Bremsstrahlung photons and characteristic x-rays (Paragraph 63 indicates that Bremsstrahlung “noise” is present for all targets), a filter for preferentially transmitting the characteristic x-rays but blocking the Bremsstrahlung photons (Paragraphs 45-46 and 79, since only the primary beam is retained, the lower Bremsstrahlung beam is removed), a moveable element for focusing or collimating the transmitted characteristic x-rays into a beam and means for controlling the position of the movable element (Paragraphs 44 and 48).

This rejection is respectfully traversed for the reasons set forth below.

- (1) **Anticipation:** The law of anticipation under Section 102 is clear, as set forth in MPEP 2131: “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). “The identical invention must be shown in as complete detail as is contained in the ...claim.” *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Each and every element of Applicants’ claims is not found in Sun, as discussed below.
- (2) **Micro-miniature:** Applicants’ claim 13 requires that the x-ray apparatus be a *micro-miniature* apparatus (claim 13, line 25), and to this end Applicants exploit integrated circuit processing techniques to implement their micro-miniature apparatus. In contrast, Gutman describes what can only fairly characterized as a *macro x-ray apparatus*. For example, Figure 2 and Paragraph 48 of Gutman describe hollow and stationary tubes, screw holders, stepper motors, bearings etc, which are clearly constitute *macro* apparatus, not micro-miniature apparatus, as called for by claim 13.

This conclusion is corroborated by the *macro* dimensions described by Gutman in Paragraph 49 (e.g., the hollow cylinder/tube is “from 10 to 20 cm in length with interior diameter of 2 mm and exterior diameter of 1.2 mm.” In contrast, micro-miniature apparatus typical of well-known MEMS technology, which is used to implement exemplary embodiments of Applicants’ invention, illustratively has characteristic dimensions that range from mm to  $\mu\text{m}$ . In one embodiment of Applicants’ invention some components have characteristic dimension in the nm range. (Specification, page 6, line 8, *et seq.*)

- (3) **Movable element:** Applicants’ claim 13 requires that the micro-miniature x-ray apparatus includes “a movable element *for focusing or collimating* the transmitted characteristic x-rays.” Illustratively, the moveable element 18.3 is a lens the position of which is under the control of MEMS structure 18 and controller 22. Importantly, the movable element focuses or collimates the characteristic x-rays. In contrast, in Gutman collimating optics 13 focuses and collimates (referred to as “conditioning” by Gutman; Paragraph 46) the x-ray beam 40, but this structure is *fixed*; it does not constitute a “movable element” as called for by claim 13. On the other, hand in Gutman the expanding pipe guide 14 is a movable element, but it *does not focus or collimate* the x-ray beam. Rather, once the x-ray beam is collimated by optics 13, it remains collimated as it propagates through guide 14, regardless of the relative position of the telescoping hollow and stationary tubes 14, 22 (Paragraph 48). Thus, the telescoping motion of the tubes 14, 22 of guide 14 does not change the conditioning of the x-ray beam. Instead, the guide 14 merely allows for “linear movement and rotation of the needle 17” (Paragraph 48); that is, guide 14 controls both the rotation of the x-ray beam through 360° and the penetration depth of the needle into tissue. Therefore, neither optics 13 nor guide 14 corresponds to Applicants’ “movable element” as set forth in claim 13.

Accordingly, it is respectfully submitted that claim 13 is not anticipated by Gutman.

**Allowable Subject Matter**

Applicants acknowledge and gratefully appreciate that the Examiner has indicated that claims 1-7 and 9-12 have been allowed and that claim 8 would be allowed if rewritten to overcome the objection discussed above.

Claim 8 has rewritten to address the objection. Therefore, it is respectfully submitted that claim 8 is also allowable.

**Conclusion**

In view of the foregoing, reconsideration of claims 8 and 13, and passage of this application to issue, are hereby respectfully requested. If during the consideration of this paper, the Commissioner believes that resolution of the issues raised will be facilitated by further discussion, she is urged to contact the undersigned attorney at 610-691-7710 (voice) or 610-691-8434 (fax).

Respectfully,

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